

## INK JET RECORDING ELEMENT

### CROSS REFERENCE TO RELATED APPLICATION

Reference is made to commonly assigned, co-pending U.S. Patent  
Application; Serial Number \_\_\_\_\_ by Wang et al., (Docket 83816) filed of 10/021,757  
even date herewith entitled "Ink Jet Printing Method", now U.S.P.N. 6,527,388

### FIELD OF THE INVENTION

The present invention relates to an ink jet recording element  
10 containing a mixture of various particles.

### BACKGROUND OF THE INVENTION

In a typical ink jet recording or printing system, ink droplets are  
ejected from a nozzle at high speed towards a recording element or medium to  
15 produce an image on the medium. The ink droplets, or recording liquid,  
generally comprise a recording agent, such as a dye or pigment, and a large  
amount of solvent. The solvent, or carrier liquid, typically is made up of water  
and an organic material such as a monohydric alcohol, a polyhydric alcohol or  
mixtures thereof.

20 An ink jet recording element typically comprises a support having  
on at least one surface thereof an ink-receiving or image-receiving layer, and  
includes those intended for reflection viewing, which have an opaque support,  
and those intended for viewing by transmitted light, which have a transparent  
support.

25 An important characteristic of ink jet recording elements is their  
need to dry quickly after printing. To this end, porous recording elements have  
been developed which provide nearly instantaneous drying as long as they have  
sufficient thickness and pore volume to effectively contain the liquid ink. For  
example, a porous recording element can be manufactured by cast coating, in

Image-Receiving Layer Coating Solution 1:

- PR 2/18/04  
PR 2/18/04
- 5 This solution was prepared by combining 269 g of the above Dispersion A, 15 g of Kymene Plus®, (Hercules Corp.), 44 g of a core/shell particle emulsion [silica core and poly(butyl acrylate) shell], 40% solids, as prepared by the procedure as described in Example 1 of U.S. Patent Application—  
Serial No. <sup>6,440,537</sup> ~~09/535,703~~, filed March 27, 2000; 82 g of poly(vinylbenzyl trimethylammonium chloride-co-divinylbenzene) (87:13 molar ratio) emulsion (15% solids), and 1.12 g of surfactant Zonyl® FSN. Poly(vinylbenzyl trimethylammonium chloride-co-divinylbenzene) is a cationic polymer particle  
10 having a mean particle size of about 65 nm and a benzyl trimethyl ammonium moiety.

Image-Receiving Layer Coating Solution 2:

- 15 This solution was prepared the same as Image-Receiving Layer Coating Solution 1 except that 82 g of poly( styrene-co-vinylbenzyl dimethylbenzylammonium chloride-co-divinylbenzene) (49.5:49.5:1.0 molar ratio) emulsion (20% solids) was used instead of poly(vinylbenzyl trimethylammonium chloride-co-divinylbenzene) (87:13 molar ratio). Poly(styrene-co-vinylbenzyl dimethylbenzylammonium chloride-co-  
20 divinylbenzene) is a cationic polymer particle having a mean size of about 60 nm and a benzyl dimethylbenzylammonium moiety.

Image-receiving Layer Coating Solution 3:

- 25 This solution was prepared the same as Image-Receiving Layer Coating Solution 2 except that the amount of the poly(styrene-co-vinylbenzyl dimethylbenzylammonium chloride-co-divinylbenzene) (49.5:49.5:1.0 molar ratio) emulsion used was 105.6 g.